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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,722	11/17/2003	Ralph A. Dalla Betta	220772010800	5024
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MORRISON & FOERSTER LLP 755 PAGE MILL RD PALO ALTO, CA 94304-1018			EXAMINER TRAN, BINH Q	
			ART UNIT 3748	PAPER NUMBER
DATE MAILED: 09/20/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/715,722

Applicant(s)

DALLA BETTA ET AL.

Examiner

BINH Q. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) 19-39 and 49-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 15 and 40-47 is/are rejected.
- 7) ☒ Claim(s) 13, 16-18, 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 04/04; 06/04.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This office action is in response to the election/restriction requirement filed July 08, 2005.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 45 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically,

- In claim 45, lines 1-2, the phase "lean zones do not comprise fuel " renders the claims indefinite and unclear.

#### Response To Election/Restriction

Applicant's election without traverse of the species of Group I, in response to the election/restriction requirement mailed June 03, 2005, is acknowledged.

Claims 19-39, and 49-65 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions. Election was made **without** traverse in Paper filed June 03, 2005. **A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP 821.01.**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

***Claims 1-12, 14-15, and 40-47 are rejected under 35 U.S.C. 102 (b) as being anticipated by Balko et al. (Balko) (Patent Number 6,176,078).***

Regarding claims 1 and 40, Balko discloses a device for producing a reducing gas, comprising: a fuel injector (17) and a catalytic zone (e.g. 19, 22, 34), wherein the catalytic zone comprises an oxidation catalyst (e.g. 22, 34) and a reforming catalyst (e.g. 19, 34), wherein said fuel injector is configured to inject fuel into at least a portion of an oxygen containing gas stream upstream from said catalytic zone to provide rich and lean zones in said gas stream when said

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gas stream flows through said catalytic zone (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-20).

Regarding claims 2 and 41, Balko further discloses that the device is configured such that as a rich zone in an oxygen containing gas stream flows through the catalytic zone, a portion of the fuel in the rich zone is oxidized on the oxidation catalyst and at least a portion of the remaining fuel in the rich zone is reformed on the reforming catalyst, thereby producing a reducing gas stream (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-20).

Regarding claims 3 and 42, Balko further discloses that a reservoir comprising a hydrocarbon fuel, wherein said reservoir is in fluid communication with said fuel injector, and wherein said reducing gas stream comprises H<sub>2</sub> and CO (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-20).

Regarding claims 4 and 43, Balko further discloses that the fuel injector is adapted to introduce the hydrocarbon fuel to an oxygen containing gas stream discontinuously to form alternating rich and lean zones (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-20).

Regarding claims 5 and 44, Balko further discloses that the fuel injector is adapted to introduce the hydrocarbon fuel to a portion of an oxygen containing gas stream essentially continuously to form a rich zone, and wherein the device is configured such that the portion of the catalytic zone through which the rich zone flows varies over time (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-20).

Regarding claims 6, Balko further discloses that the hydrocarbon fuel is selected from the group consisting of gaseous, liquid, oxygenated, nitrogen containing, and sulfur containing hydrocarbons (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claims 7, Balko further discloses that the hydrocarbon fuel is selected from the group consisting of gasoline and diesel fuel (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claims 8, Balko further discloses that the catalytic zone comprises at least one monolithic structure (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claims 9, Balko further discloses that the monolithic structure comprises a plurality of channels (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claims 10, Balko further discloses that the monolithic structure comprises metal (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claims 11, Balko further discloses that the monolithic structure comprises a ceramic material (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claims 12 and 47, Balko further discloses that the system configured such that when rich and lean zones of an oxygen containing gas stream flow through the catalytic zone, the temperature of the catalytic zone is maintained at about 450 to about 1000 °C (e.g. Figs. 1-5; See col. 13, lines 19-46).

Regarding claim 14, Balko further discloses that a heater or heat exchanger upstream from the catalytic zone, wherein said heater or heat exchanger is in gas flow communication with the catalytic zone (e.g. Fig. 5; See col. 12, lines 19-67; col. 13, lines 1-46).

Regarding claim 15, Balko further discloses a pre-oxidation catalyst downstream from said fuel injector and upstream from said catalytic zone, wherein said pre-oxidation catalyst comprises an oxidation catalyst, wherein said fuel injector is configured to introduce fuel to at least a portion of an oxygen containing gas stream upstream from said pre-oxidation catalyst,

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such that when said gas stream flows through the pre-oxidation catalyst, at least a portion of the fuel introduced by the fuel injector is oxidized, thereby heating the gas stream (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claim 45, Balko further discloses that the lean zones do not comprise fuel (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

Regarding claim 46, Balko further discloses that the lean zones comprises fuel at an equivalence ratio less than 1 (e.g. Figs. 1-5; See col. 7, lines 19-67; col. 8, lines 1-67; col. 9, lines 1-53).

#### ***Allowable Subject Matter***

Claims 13, 16-18, and 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

#### ***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

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Docter et al. (Pat. No. 6698190), Wakamoto (Pat. No. 5894728), Wen et al. (Pat. No. 6669914), Boegner et al. (Pat. No. 5586433), and Shiino et al. (Pat. No. 6845610) all disclose an exhaust gas purification for use with an internal combustion engine.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT  
September 16, 2005



Binh Q. Tran  
Patent Examiner  
Art Unit 3748